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UNDERSTANDING RULES OF ORIGIN

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ABSTRACT

This paper surveys recent work on the economic effects, both theoretical and empirical, of Rules of Origin (RoO) in a Free Trade Area (FTA).

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1 Introduction

The proliferation of Free Trade Areas ($FTAs$) in the last decade has begun to generate interest in one of its most important components: rules of origin or RoO for short. These specify the conditions under which a good becomes eligible for zero tariffs in an FTA. While it is tempting to think of $FTAs$ as liberalizing, they are often not. The main reason is that RoO are in themselves hidden protection: they create what look like tariffs on imported intermediate inputs and affect the price of domestically made inputs as well. These RoO are negotiated industry by industry and there is enormous scope for well organized industries to essentially insulate themselves from the effects of the FTA by devising suitable RoO. In this manner, RoO may even make $FTAs$ feasible in the presence of organized interest groups. Grossman and Helpman (1995) for example argue that being able to exclude certain sectors (which is what appropriately constructed RoO will do) can make a FTA viable.[1]

This paper surveys the existing theoretical literature with a view to explaining in a non technical manner what RoO do and why they are critical in determining the effects of $FTAs$. This is an area that has been neglected in economics[2] until quite recently, witness the absence of RoO in most books

[1] A recent paper that develops this idea is Duttagupta and Panagariya (2001) who argue that RoO can improve the political viability of $FTAs$. They do so in a menu auction framework a la Grossman and Helpman (1995), (2001).

[2] Though not neglected in law, see for example Vermulst (1992).

dealing with integration even as late as the book by de Melo and Panagariya (1993). Consequently, much of the work being surveyed here is quite recent.

Many analysts have tended to view $NAFTA$ and other FTA arrangements as being similar to customs unions. Indeed, in some respects they are. However, RoO, which are part of both $FTAs$ and customs union agreements, play very different roles under these two arrangements. In a customs union, members have a common external tariff so that there are no rents to be obtained from trans-shipment. Therefore, when a RoO is agreed upon, its purpose is simply to determine the extent of preferential treatment for fellow members. For example, the European Community has rules governing treatment of imports of semiconductors. In February 1989 the EU changed its practice of conferring origin based on the place of assembly. It began conferring origin based on the place of diffusion. Thus, if diffusion is undertaken within the Community, then origin is granted and importation to another EC country is duty-free. If, however, diffusion is undertaken abroad, then the chip is treated as having been produced outside the community, and the (common) external tariff applies. This change would promote investment in the EU by Japanese and U.S. firms who might otherwise have only assembly operations in the EU and would grant origin to EC producers who assembled their products abroad.

In an FTA, members maintain their own external tariffs. Hence, tariffs may differ between member countries. In this setting, RoO assume a

function additional to that under customs unions: RoO prevent the import of any particular commodity from entering through the country (which gets the tariff revenue) with the lowest duty on the item in question and being re-exported to other countries in the FTA. Without RoO, a FTA could be highly liberalizing as the lowest tariff would apply to each category of imports.[3] Note that such re-exports need not be a good thing. If transport costs are significant, such deflection also has real costs since trans-shipping wastes resources. RoO might prevent or reduce such waste, thereby raising welfare.[4] For example, if the trans-shipping costs are slightly below the tariff differential, welfare reducing deflection occurs in the absence of RoO since consumer prices are essentially unchanged, resources are used in trans-shipment, while tariff revenue falls. Rules of origin would prevent this.

Such deflection could lead to a tariff war as countries attempt to attract such trade. In the absence of transport costs, the country in the FTA with the lowest tariff on a product will be the conduit for all imports into the FTA and will reap all tariff revenues. This makes it in the interest of all other countries to reduce their own tariffs in order to attract imports to their ports! Only when the lowest tariff is zero is this not an issue, suggesting that in equilibrium, all external tariffs would be competed down to zero[5]! It is

[3] The liklihood of such trade deflection for final goods was pointed out in Shibata (1967).

[4] In addition, standard second best arguments also apply: with many tariffs, reducing one need not raise welfare.

[5] Richardson (1995) points out that this can happen even when there are ROO which domestic production automatically meets. As a result, domestic production is exported to the partner country and domestic consumption is imported.

interesting to note that this seems to have actually happened in America after the colonies obtained independence from the British. During the Articles of Confederation period (1777-1789) the thirteen original states in America set their external tariffs independently though internal trade was essentially free. They were also Britain's largest export market. Despite this, they could not extract rents through tariffs or use the threat of tariffs to promote their own external objectives. Since British merchants landed their goods in the ports of the states offering the most favorable terms, despite independence, these states undercut one another in setting their duties resulting in very open markets. This is pointed out in McGillivray and Green (2001) and was originally mentioned in Viner (1950).

RoO can also provide an incentive for regional producers to buy intermediate goods from regional sources, even if their prices are higher than those of the identical import from outside the FTA, in order to make their product "originate" in the FTA and qualify for preferential treatment. This, in effect, protects FTA suppliers.[6] As a result, an FTA can profoundly affect trade patterns and the investment flows needed to sustain them. Lloyd (1993) makes the case that using a tariff on value added outsde the FTA would be more efficient than using *RoO*.

[6]Krueger (1993) points out the protective effect of *RoO* on domestic intermediates. Lloyd (1993) sketches out, and Rodriguez (2001) develops more formally, a model with multistage protection in the presence of such *RoO*. Also see Rosellon (2000), which was part of his Ph.D in 1994, and Falvey and Reed (1998).

Just because RoO may be protectionist does not prove that they are! However, RoO often account for large chunks of draft agreements (RoO took up 200 pages of the $NAFTA$ agreement) and can be very contentious, suggesting that they might be strategically used. Recent work by Estevadeordal (2000) casts some light on this matter. He constructs a model with two endogenous variables: the severity of the RoO and the length of the phase in period. Both were key factors over which negotiations were conducted. Assume that the severity of RoO is determined by exogenous factors like the difference in the (MFN) tariffs between the countries as well as the extent of intra FTA trade, but does not depend on the length of the phase in. Also, that the length of time in the phase in period depends on the negotiated RoO, as well as other exogenous factors. Estevadeordal (2000) estimates such a model and argues that RoO are being used to prevent trade deflection as the sectors which have large differences in tariffs between the partners are the ones where RoO are strongest. Moreover, that protection and the extent of RoO are positively correlated. Sectors with long phase in periods are also the sectors with high predicted RoO suggesting that the same forces drive both. The work of Cadot et. al (2002) also suggests that RoO are negating the effects of tariff reductions due to an FTA. They use the severity of the RoO index (as constructed in Estevadeordal (2000)) and a measure of tariff preferences in NAFTA as explanatory variables to explain Mexican exports to the U.S.. They show that the former reduced Mexican exports, while the

latter raised them, so that the net effect was close to zero.

In addition, it is worth pointing out that *RoO* are often quite expensive to document. As a result, even if a product satisfies origin, an importer may prefer to pay the tariff rather than bother with the documentation needed. Some idea of how extensive this is might be gleaned from the prevalence of outward processing trade (OPT) between the EU and the Central and Eastern European countries[7]. The latter have duty free access to the EU but instead of proving origin is met, EU firms use the OPT provision instead suggesting that the cost of proving origin exceeds the duty paid using the OPT provision. For example, as documented in Breton and Manchin (2002), when Albanian exports of clothing to the EU are considered, OPT provisions were used over 90% of the time. However, Turkey, which is part of the customs union (hence it does not have any ROO to meet) used these provisions only .5% of the time[8]. Herin (1986) also shows that the cost of proving origin seems to have led over a quarter of EFTA exports to pay the MFN tariff.

I will argue that much of what we have learnt from the literature can be summarized in three laws which are worth remembering when dealing with *RoO*.

Law 1: *RoO* can insulate an industry from the consequences of an *FTA*

[7]OPT encourages processing overseas by *EU* firms as the duty that would have been paid on the exported inputs to be processed abroad is deducted from the duty owed on the imported product.

[8]It may also be that OPT trade allows a greater fraction of potential rent to be captured by the EU importer, an open question on the empirical side.

and it can provide hidden protection for intermediate inputs used by it. It may well be that the ability to insulate an industry makes $FTAs$ easier to pass than Customs Unions. Agents who stand to lose from an FTA can undo its effects without, for the most part, even being seen as doing so! For example, in the U.S.-Canada Free Trade Area (FTA), the production of aged cheese from fresh milk does not confer origin.[9] This in effect prevents free trade of cheese in the FTA.

Law 2: The precise form of the RoO matters. Lawyers and trade negotiators have clearly understood this for a long time. This is evident in the importance placed on the details of the RoO negotiated. For example, a lot of importance was placed on the treatment of interest costs by Honda when content requirements were being defined for the FTA between the U.S. and Canada.

Law 3: The time period matters. Responses to RoO take time. Short run partial equilibrium effects can differ greatly from long run, general equilibrium ones. For example, in the short run the response to RoO may be primarily in terms of trade flows while in the long run it may take the form of investment flows. Hence, it is vital to specify the time frame for analysis and to incorporate the major linkages across sectors and options available to firms.

Law 4: You can have too much of a good thing. Having more restrictive

[9] See Palmeter 1993 footnote 4 for details.

RoO may result in higher not lower imports! This point is quite subtle and provides a warning to policy makers and potential users that *RoO* may well backfire!

The paper proceeds as follows. Section 2 looks at how *RoO* are defined. Section 3 examines how they affect the sourcing of inputs and hence the level of costs. Section 4 surveys what the literature has to say about their effects using a partial equilibrium setting. The additional complications that arise from allowing some input prices to be endogenous are outlined as well. Section 5 discusses extensions to general equilibrium, while Section 6 concludes.

2 Background

RoO can be defined in a variety of different ways. From a legal point of view, there appear to be four criteria used singly and in combination with each other[10]. These are (a) requirements in terms of domestic content: content can be defined in terms of value added or in physical terms.[11] In addition, the required share of value added can be defined in terms of cost or price.

(b) Requirements in terms of a change in tariff heading: *RoO* set in terms of a change in tariff heading are specified in terms of tariff categories. To satisfy origin requirements a product must change its tariff heading in a spec-

[10] For example, the Australia-New Zealand Closer Economic Relationship (CER) relies on a 50% value added standard in conjunction with the requirement that the last process performed in manufacture be in the territory of the exporting member state.

[11] One example of physical content requirements is that in the cigarette industry in Australia. Cigarette manufacturers must meet a domestic content requirement on tobacco leaf use, defined by weight.

ified way. By making the changes needed more or less extensive, the origin requirement can be made more or less restrictive. In addition, exceptions can be explicitly made. For example, under $NAFTA$, transformation from any other chapter (2 digit classification level) of the harmonized system, to tomato catsup, chapter 21, confers origin, *except* transformation from tomato paste which falls in chapter 20! Since the U.S. is a larger market for catsup than Mexico, while Mexico has a natural advantage in growing tomatoes, and hence making paste, this seems like a clear attempt to keep the production of catsup in the U.S..

(c) Requirements in terms of specified processes that must be performed within the FTA or CU: In the case of American imports of apparel under $NAFTA$, the rule is one of "triple transformation." Only if each step of the transformation from raw material to finished garment has been undertaken within the FTA will preferential treatment be given. American textile producers, of course, benefit from this rule.

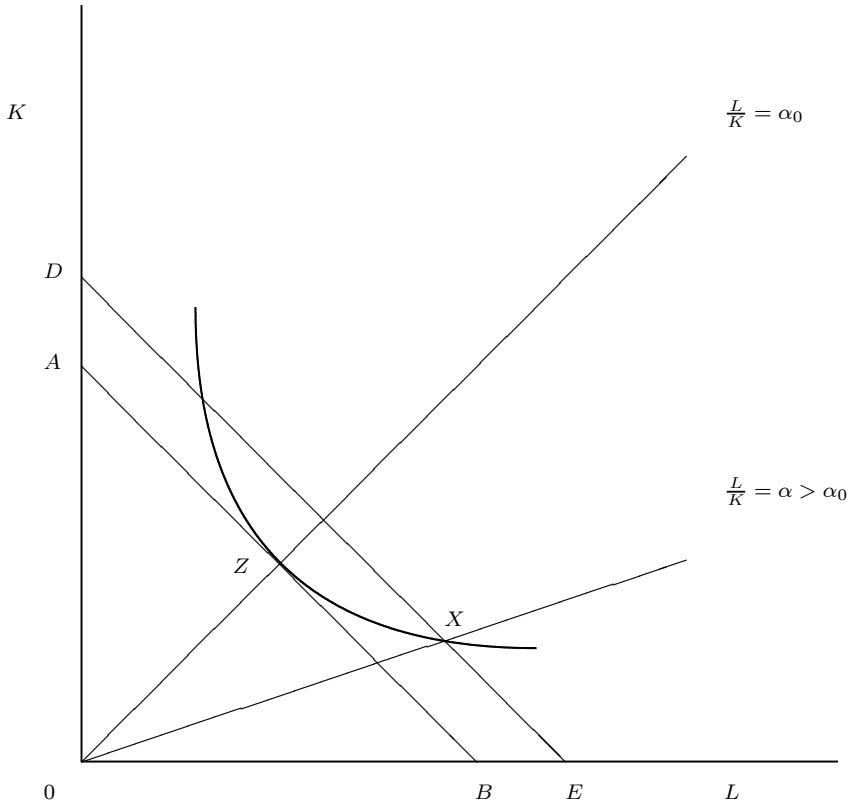
(d) Requirements that the product has been "substantially transformed". This is usually hard to pin down as it is loosely defined. In the United States the term "substantial transformation" has come to mean the determination of origin based on common law, reasoning from case to case. It then results in commodity-specific RoO which fall into one of the earlier three categories.

3 *RoO* and Costs

From an analytical viewpoint the basic effect of *RoO* is to raise the production costs of the product which meets the binding *RoO*. In the discussion that follows I draw from Krishna and Krueger (1995). *RoO* specify constraints that must be met in order to obtain origin. If these constraints are binding then the choice of inputs used in production differs from the unconstrained ones and hence costs are higher if the *RoO* are met. Since more restrictive *RoO* constrain choices more than do less restrictive one, an increase in restrictiveness raises the minimized level of costs.

This is illustrated in Figure 1 which illustrates a physical content requirement that has to be met to obtain origin. *FTA* inputs (L) and imported inputs (K) are used to make the good in question under constant returns to scale. The unit iso-quant is depicted by the curve in Figure 1. At existing prices for L and K, firms choose the input mix at the point labeled Z using L and K so that their ratio equals α_0. The lowest unit costs attainable are represented by the height of the line AB. A binding *RoO* would remove Z from the feasible set. If, for example, the *RoO* required L/K to be at least $\alpha > \alpha_0$, then only points below the ray from the origin with slope $1/\alpha$ and above the iso-quant would be feasible. As a result, unit costs are minimized by choosing the input mix at X. Unit costs if the *RoO* are met are given by the height of the line DE. Note that the *RoO* distort the input mix in favor of the *FTA* made input L for any given level of output so that at any given

Figure 1: Physical Content ROO and Costs



output level, the demand for L is higher.

It is easy to see that as the *RoO* become more restrictive, that is, as α rises and the ray from the origin swing down, unit costs rise. Suppressing input prices in the notation for the time being, let unit costs when the *RoO* is met be $R(\alpha)$. Note that $R(\alpha)$ is increasing in α for $\alpha > \alpha_0$.

4 The Effects of *RoO*: Partial Equilibrium

The literature has by and large assumed perfect competition. The partial equilibrium setting provides three results. First, that in the long run, *RoO* cause large changes in investment flows due to an *FTA*. In the absence of *RoO*, there would be large changes in trade flows, not investment flows. Second, in the long run, *RoO* may raise or lower welfare relative to pre *FTA* levels depending on their restrictiveness. If *RoO* are weak, they are likely to raise them[12], while if they are stringent, they will reduce them. Third, that in short run, where capacity constraints exist, the form of the *RoO* is especially important. It is easiest to explain these three results with a particular example based on Krishna and Krueger (1995).

Suppose that the *FTA* is made up of country *A* and *B*. Both countries import the final good in question from the rest of the world and take the world price of P^* as given. *B* also produces it domestically so that the domestic price in *B* equals the domestic unit cost of production, which equals the world

[12]I say likely since in a world with multiple distortions or tariffs, a reduction in some of them may not raise welfare as indicated by the theorem of the second best.

price as we assume that the tariff in B is zero. Country A has a positive tariff on the good, and for simplicity assume A has no domestic production. All tariffs are constant across suppliers[13], though members of an FTA get preferential treatment.

An FTA member firm interested in selling its products in the partner country has the choice of meeting the RoO and having zero tariffs levied on it, but having higher costs of production (as well as further documentation costs that the RoO has been met[14]) and not meeting it and paying the tariff. It chooses the option that has a higher payoff. Now since B imports the good and has the lower tariff, firms in A will not want to sell to B but firms in B would be interested in selling to A. Thus the price in B is the world price, and must be no weakly lower than the price in A. Let P^A and $P^B(= P^* = C^B)$ denote domestic prices in A and B.

A firm in B exporting to A could meet the RoO and obtain $P^A - R^B(\alpha)$, or ignore it and get $P^A - C^B(1 + t^A)$ where C^B and $R^B(\alpha)$ denote the unrestricted and restricted unit costs in B[15]. Hence, if $R^B(\alpha) < C^B(1 + t^A)$, it is worthwhile for it to accept the restriction and otherwise it is not. The price in A is therefore the minimum of $R^B(\alpha)$ and $C^B(1 + t^A)$. Recall that

[13] This makes sense given that most countries extend most favored nation treatment to all their trading partners.

[14] Providing appropriate documentation to demonstrate origin can be very costly. Herin (1986) reports costs to Finnish firms of satisfying EC ROOs for entry of Finnish exports costs firms satisfying ROOs from 1.4 to 5.7 percent of the value of shipment (Herin, pg. 7). Such costs are reported to have resulted in a quarter of eligible EFTA exports to the EU paying the applied MFN duty rather than providing the needed documentation.

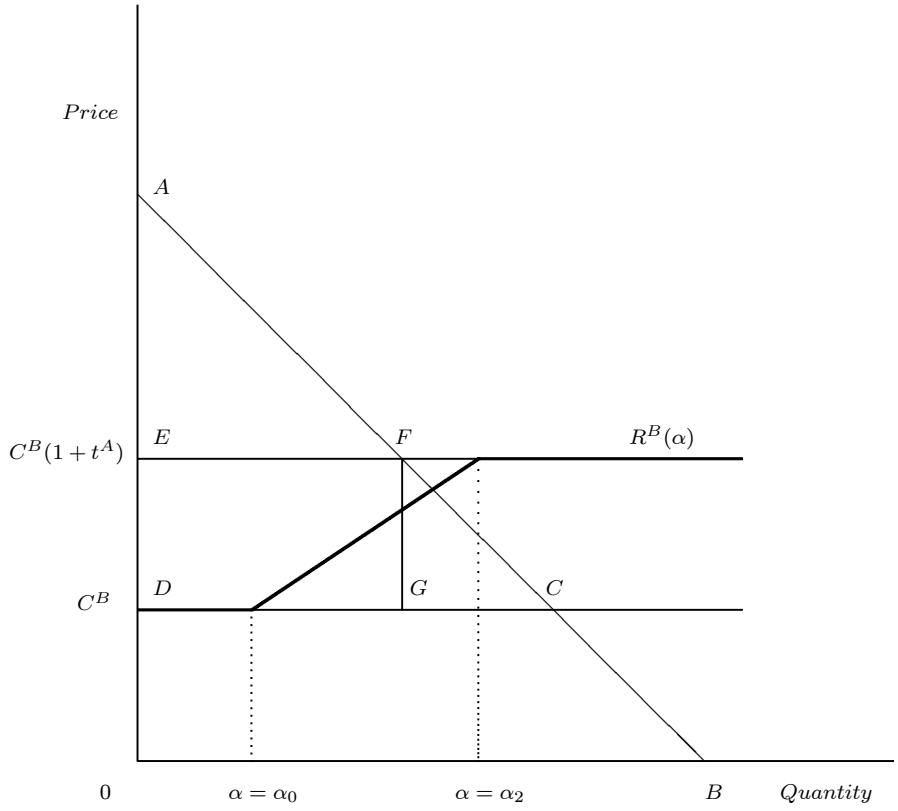
[15] Assume that tariffs are levied on price which equals domestic cost.

restricted costs increase in α and equal unrestricted costs for low enough levels of α. If RoO are not restrictive, i.e. α is below α_0, in Figure 2 (which depicts both demand in A and costs as a function of α) then RoO are not binding and $R^B(\alpha) = C^B$. In this case the creation of an FTA will result in the effective lowering of tariffs in A on the final good to those in B. If RoO are restrictive but not too much so, i.e., α is between α_0 and α_2, then costs of supplying A exceed world costs but are below the cost of imports from outside the FTA. Thus the price in A rises with $R^A(\alpha)$ but is still below the pre FTA price. Once RoO are restrictive enough, i.e. α exceeds α_2, then costs of supplying A from B exceed the cost of imports from outside the FTA.

These results are in sharp contrast to those which would prevail in the absence of any RoO. In the absence of transport costs and under the same assumptions as made above, all an FTA without RoO would do would be to reduce tariffs on the final good as all imports to A would come in through B to avail of the lower tariff there. Welfare would have to rise in A due to the FTA, as the gain in consumer surplus would outweigh the loss in tariff revenue. However, *production* in B need not be affected. With RoO production in B rises to the point where B supplies all A's imports and this requires large capital inflows into the sector. This the logic of the first result.

Note that A's welfare with RoO is non monotonic in α. Welfare is the sum of consumer surplus, producer surplus and tariff revenue. Since there

Figure 2: Demand, Price and Cost in an FTA



is competition and constant returns to scale, price equals cost and there are no profits in the long run. Welfare in A must thus increase above its pre FTA level if $\alpha \leq \alpha_0$. This occurs as price falls so that consumer surplus rises. Although tariff revenue falls, as is usual, the consumer surplus gain (EDFC) exceeds the tariff revenue loss (EFDG) as depicted in Figure 2. In the region where the RoO bind, but it remains worthwhile accepting them, that is $\alpha_1 < \alpha \leq \alpha_2$, an increase in α raises the price in A as the price equals $R^A(\alpha)$. As α approaches α_2, all consumer surplus gains vanish and since there

are no tariff revenues either, welfare must be lower that prior to the FTA. In other words, the RoO get more restrictive, the higher production costs eat away the consumer surplus gain of an FTA. At some point this makes an FTA worse than no FTA. Finally, when RoO are so restrictive that they are ignored, i.e., α exceeds α_2, the FTA has no effect on the price in A and the pre FTA welfare prevails. This is the logic of the second result above.

All the above is valid for the long run. However, in the short run there are likely to be capacity constraints since it takes time for capacity to be built. Think of these capacity constraints as taking a very strict form so that costs are constant $R^B(\alpha)$ until the capacity constraint where they become infinite. Thus, supply facing B when RoO are set at α consists of three distinct segments. Supply is zero when price is below $R^B(\alpha)$. At a price of $R^B(\alpha)$ a horizontal segment exists up to B's capacity. For price above $R^B(\alpha)$, supply equals capacity so that there is a vertical section. As world prices are given, if the price weakly exceeds $P^*(1+t^A)$, supply is infinite. As a result, the price is given by the minimum of $R^B(\alpha)$ and $P^*(1+t^A)$ only if capacity in B exceeds the demand at $R^B(\alpha)$. Otherwise, there are quasi rents and the price in A exceeds production costs.

In the short run, as opposed to the long run, all imports to A do not come from B. In the short run, output, which equals exports to A from B, expands to capacity at which point marginal costs rise choking off supply. Assuming there is no change in the world price and given than B cannot meet

all of A's demand, the price in A will be unchanged. All that will happen is a reallocation of A's imports from the rest of the world to B, causing a reduction in A's welfare arising from the loss in tariff revenues. In the long run, of course, assuming no changes in world prices and the price of inputs in B, investment will flow into B, leading to the long run effects outlined above.

4.1 Why Details Matter

Why should the details of how *RoO* are defined matter to agents? Given the effort devoted to thrashing out such details it is clear that these details are seen as being critical. The reason is simple. Even though definitions may sound alike they need not be. Some definitions may be easier to meet than others and lobbying for the most favorable definition is to be expected. For example, suppose that costs have three components: capital costs, denoted by B, FTA inputs costs denoted by A, and imported inputs costs denoted by D. Total costs are C, and $C = A + B + D$. Suppose that *RoO* specify the minimum share that FTA inputs must account for. Suppose that this is defined as a cost share. Now note that excluding capital costs from all costs makes any given *RoO* harder to meet. If capital costs are included, the share of FTA costs is given by $(A + B)/C$. If they are excluded, they are given by $A/(C - B)$. Removing B from the numerator and denominator reduces the numerator by a greater percentage than the denominator reducing their ratio. As a result, any required share of domestic input used is harder to

satisfy if capital costs are excluded.[16] The basic intuition is that including capital costs (or any other costs for that matter) raises the numerator by a greater percentage than the denominator, thus raising their ratio, since the numerator is by definition smaller than the denominator. This might help explain why the treatment of interest costs was a bone of contention between the U.S. and Canada and Honda in defining content requirements.[17]

Another example where details matter comes from defining shares in terms of price versus cost. In Krishna and Krueger (1995) it is argued that defining content in terms of cost or price makes no difference in the long run, basically because price equals cost in the long run. Nor would it make a difference in the long run whether a minimum share, α, of domestic inputs have to be used or whether imported inputs are restricted to the equivalent maximum share, $1 - \alpha$. However, both of these matter in the short run due to the existence of quasi rents.

For example, consider a rule of origin defined in terms of the minimum share of domestic inputs relative to price rather than cost. Since price exceeds cost and an increase in the denominator makes the constraint harder to meet, the price based scheme has a higher cost of production than the equivalent

[16] The argument is not quite tight since the choice of inputs will differ in the two cases.

[17] Some work does not look at the restricitiveness of *RoO*. For example, Krishna and Panagariya (2001) assume that final goods produced in the FTA using the minimum cost input mix automatically meet the *RoO*. Hence, all the production of the lower tariff country is shipped to the higher tariff one. Consumer prices differ but producer prices do not so that production efficiency is mintained. They show that, analogous to the famous Kem Wan result, there exists a Pareto improving FTA in this setting when lump sum transfers are permitted.

cost based one. With this definition, for any required share, α, firms in B prefer the cost based form to the price based form.

Alternatively, consider a RoO defined in terms of the maximum share of foreign inputs relative to price rather than cost. Since price exceeds cost and an increase in the denominator makes the constraint easier to meet, the price based scheme has a lower cost of production than the equivalent cost based one! Thus, for any required share, α, firms in B prefer the price based form to the cost based form.

4.2 Going Part Way: Allowing Input Price Changes

There are at least two kinds of price changes that need to be allowed for: Changes in the word prices of goods and changes in the prices of intermediate goods in the FTA. Incorporating the former involves dropping the small country assumption while incorporating the latter involves allowing for at least some general equilibrium effects to occur. Falvey and Reed (2000) argue that RoO have a role complementary to that of tariffs as RoO affect input demand. Thus, a large country could affect the terms of trade in both final and intermediate goods by using RoO as well as tariffs on the final good.

Ju and Krishna (1998) and (2002a) show that allowing the price of FTA inputs to be endogenously determined results in a number of interesting insights. The discussion which follows can be found in more detail in their work. The driving force behind their results is a non monotonicity that arises naturally in such settings and which seems to have been previously

overlooked.

An intuitive explanation of what lies at the heart of their results follows. Suppose that there are two inputs, capital and intermediates. Suppose, moreover, that domestic and imported are perfect substitutes and that there are a given number of firms who have fixed capital but who can change their use of intermediates. The *RoO* forces firms in the FTA who comply to use more of the domestic intermediate that they may wish to in order to obtain origin and hence qualify for zero tariffs. If the *RoO* is not too restrictive then all firms will wish to comply[18] and a more restrictive *RoO* will shift out domestic intermediate demand making its price rise. However, there comes a point where this price has risen to the point where firms are indifferent between complying and not.[19] Some firms then choose to comply and others and this number changes with the level of restrictiveness to change the price of domestic intermediates so as to keep firms indifferent. In this regime, increases in restrictiveness have exactly opposite effect on the price of domestic intermediates!

This reversal in the comparative statics results drives their model and yields their unusual comparative statics results. They show that as the *RoO* becomes more restricitive, the price of intermediates and the import of final goods rises then falls while the import of intermediates first falls and then rises. All three have a common turning point, the point where the regime

[18] This is termed the homogeneous regime.

[19] Ju and Krishna (2002) term this the heterogenous regime.

switches from the homogeneous to the heterogeneous one.

Much of the concern regarding preferential trading arrangements has been with the implications of such arrangements on market access. The work of Ju and Krishna shows that effects in both final and intermediate good market need to be considered as they work in opposite directions. Moreover, that it is important to look at the effect on the FTA as a whole, as well as on each member. This is because compensating flows occur in other member countries in response to changes in flows in one member country.

In the model used by Ju and Krishna the intermediate good market is the most protected (in the sense that both imports reach a minimum and the price of FTA made input reaches its maximum) when the regime switch occurs. Intermediate goods producers are best off here as this is where their product price, and hence rents, are maximized. In sharp contrast, the final good market is most open (in the sense that the imports reach their maximum) at the same point. Final goods producers in the lower tariff country gain the most when they have access to the higher tariff country's markets at the least cost, that is they want the RoO to be non distorting. Thus these two groups are likely to lobby for different levels of RoO.

5 General Equilibrium Effects

Analyzing the effects of RoO in general equilibrium seems like a rather hard thing to do in an elegant manner. Krishna (2003) develops a way of looking

at the effect of conditional polices, such as RoO, in a general equilibrium setting under perfect competition. A simple observation makes the problem tractable using standard duality tools in general equilibrium. Polices like RoO in an FTA have a carrot and hoop element to them. The carrot, preferential treatment, is obtained only by jumping through hoops, namely meeting origin requirements. The basic insight used is that if, by availing itself of the policy, the firm can raise the factor prices it can afford to pay, it will be willing to do so. Else it will not. In other words, the paper looks at the effects of such restrictions on the factor price frontier and shows how this can be derived quite simply for certain kinds of RoO. It is shown that when RoO are set at ex ante binding levels, they need not be binding ex post nor must they result in an inflow of capital. Moreover, the paper argues, the kind of non monotonicity seen in Ju and Krishna (1998) is likely to be prevalent in general equilibrium.

There has been some work on looking at the effects of $FTAs$ incorporating $RoOs$ in a partial equilibrium framework. Such back of the envelope calculations are not hard and can provide very interesting results. For example, Mattoo, Roy and Subramaniam (2002) look at the effects of RoO in the Africa Growth and Opportunity Act recently enacted by the U.S. and argue that restrictive conditions on market access, the most important of which are the RoO, reduce its benefits significantly: they argue that the medium term benefits would have been almost five times greater without such conditions

on access. Computable general equilibrium models can also be used to give an idea of general equilibrium effects.

6 Conclusion

Much of the concern felt about regional trading areas has been that they will exclude non member countries from their markets. Much of this discussion, see for example Krugman (1991) and counter arguments by Bond and Syropoulos (1996) has been couched in terms of the greater market power, and hence higher optimal tariffs of larger trade blocs. However, tariffs on most manufactured goods are bound by concessions made in successive rounds of negotiations under the auspices of $GATT$. It seems likely that RoO, which are less well understood and extremely important in practice, provide a far greater reason for concern.

While a beginning has been made in understanding the effects of RoO at a theoretical as well as empirical level, far more remains to be done and the papers in this conference are making valuable contributions in this regard. On the theoretical side, work has been confined to partial equilibrium models and has focused on perfect competition. There are many lessons that can be learned from looking at imperfect competition and general equilibrium. Rules of Origin clearly provide a way to raise the costs of FTA rivals. The desirability of doing so has been studied in industrial organization. RoO can act to segment markets. Moreover, they can result in interesting switches in

best response functions. Many of these ideas are the subject of papers written for this conference. However, much work remains. On the political economy side, for example, it would be fascinating to look at particular examples in more detail to see who lobbied for particular *RoO*, while using simple models to understand their desirability for the various interest groups.

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